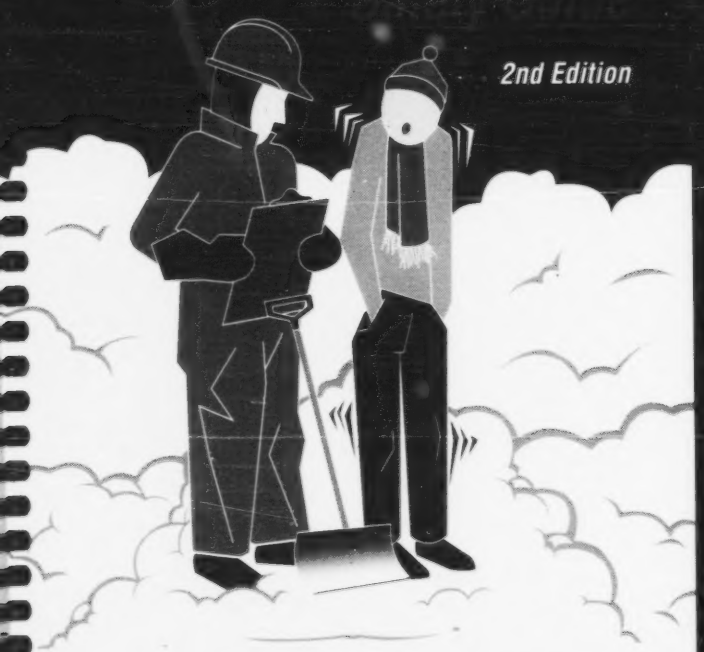
COLD Weather Workers

2nd Edition



Prepared by the Canadian Centre for Occupational Health and Safety

EMERGENCY INFORMATION

Ambulance

Fire

Police

Poison Control Centre

Doctor

Company Emergency Phone Number

Prepared by

CANADIAN CENTRE FOR OCCUPATIONAL HEALTH AND SAFETY
in collaboration with
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Cold Weather Workers Safety Guide

2nd Edition
(Revised)

CCOHS

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Company _____

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Doctor _____

Phone _____

Allergies _____

Medical Conditions

_____

_____

In case of emergency please notify:

Name _____

Relation _____

Address _____

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Phone _____

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Cold Weather Workers Safety Guide

Objectives

This is your guide to working safely outdoors in winter. It will enable you to:

- recognize workplace hazards;
- prevent accident and injury by safe work practice and use of personal protective equipment;
- deal with accidents and emergencies;
- understand your duties and rights as given in occupational health and safety legislation;
- contact government departments to find health and safety information.

Scope

This guide will assist in the development and implementation of safe work practices for outdoor work in cold weather. For employee training sessions, the guide is a practical handout for participants.

Target Audience

This guide is for workers, supervisors, health and safety representatives, health and safety committee members, occupational health nurses and health and safety professionals. Municipal work, electric power distribution, construction, oil and gas extraction, trucking, police work, fishing and logging are some examples of cold weather work.

Summary

Extreme cold is potentially hazardous to your health. You can learn to work and live in cold environments, provided you have adequate clothing and access to warm shelter. You must wear sufficient clothing, including face protection, gloves and foot wear. Loose multi-layered clothing provides the best protection, because air trapped between layers of clothing provides additional thermal insulation. Hypothermia and frostbite are two major health hazards of cold exposure.

Hypothermia is the lowering of body temperature due to excessive loss of body heat. Hypo-thermia can be fatal unless the victim is moved to a warm shelter and receives timely medical attention. Hypothermia victims are unable to recognize their own signs and symptoms of hypothermia. Their survival depends on co-workers ability to do so. As a precaution, you should not work alone in cold extremes. Use the "buddy system" to detect signs of cold injury in co-workers.

Frostbite is the freezing of extremities such as fingers, nose tip, toes, ears and cheeks, which become numb and hard. Because of poor blood supply, these extremities may become frostbitten even if the rest of the body remains warm or even overheated. Frostbitten parts should be placed against warm body surfaces and rewarmed.

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Section I

Basic Rules of Safety

1. The Law Says...
2. Elements of On-the-Job Safety
3. Safety Tips for New Employees
4. Safety Tips for Supervisors

1. The Law Says...

The health and safety laws are meant to protect you.

By law your employer must provide you with a safe and healthy workplace.

It is your supervisor's responsibility to make sure that you understand the safe way of doing your work.

Working safely is your responsibility. You must use personal protective equipment required by your employer, follow safety procedures required in your area and report hazardous conditions you are aware of.

If you think a task is too dangerous, you have the right to refuse to do that task until it can be done safely. You must report to your supervisor your intention to refuse dangerous work.

2. Elements of On-the-Job Safety

1. **The right way is the safe way** of doing your job. Follow instructions. If you don't know, ask.
2. **Know potential hazards** in your work and ways of working safely to prevent such hazards.
3. **Know safety rules for specific jobs** and be able to explain these rules to fellow workers.
4. **Follow emergency procedures** in case of fires, medical emergencies, and need of rescue squad.
5. **Report all injuries** including minor scratches, cuts, burns, slips and falls. Your employer needs this information to take corrective action to prevent future injuries. Follow your company's procedures of reporting injuries.
6. **Know emergency equipment** and understand how to use emergency equipment such as fire extinguishers, eye-wash and safety showers.
7. **Use personal protective equipment** as required by your employer. Such equipment includes, but is not

limited to, safety glasses, hearing protectors, respirators, safety boots, hard hats, gloves and face shields.

8. **Learn special safety procedures** for particularly hazardous work such as vessel entry, confined space entry, electrical work and welding.
9. **Follow electrical safety rules** when using electrical equipment, grounding portable electrical tools and working near overhead power lines.
10. **Understand seasonal safety** procedures for working safely outdoors in cold weather, icy conditions, and sunlight (UV rays).
11. **Perform a circle check** before taking out a vehicle. Driving safely is an essential component of all outdoor work.
12. **Lock-out** and tag energy sources (electrical, mechanical, hydraulic, pneumatic, chemical, etc.) of all machinery and equipment under repair.
13. **No horseplay**. Horseplay is dangerous and prohibited.
14. **Wear proper clothing.** Do not wear loose sleeves, cuffs, rings, bracelets, nor anything else that may get caught in moving machinery and cause injury.
15. **Off the job safety** is equally important. Safety does not stop when you leave your workplace.

3. Safety Tips for New Employees

When you are starting a new job, ask your supervisor/ employer the following health and safety related questions.

* What are the potential hazards of the job?
* Is job safety training available?
* What safety equipment do I need to do my job?
* Do I need to wear personal protective equipment (PPE)? Will I receive training on how to use the PPE?

* What do I do in case of fire or another emergency?
* Where do I find fire extinguishers, first aid kits, first aid rooms and emergency assistance?
* What are my responsibilities regarding health and safety?
* In case I notice something wrong, to whom should I report?
* Who is responsible for answering safety related questions?
* What do I do if I get injured, or have an accident?

4. Safety Tips for Supervisors

* Explain the importance of safety to employees.
* Implement safe work practices.
* Praise for safe behaviour.
* Solicit participation.
* Reward for participation.
* Be a shining example.
* Promote safety by providing books, videos, literature, etc.
* Visit plant areas regularly.
* Learn the names of employees.
* Improve and simplify safety continuously.

Section II

Maintaining a High Standard of Safety

1. Safety Inspections
2. Accident Investigation and Reporting
3. First Aid

1. Safety Inspections

Purpose

The purpose of an inspection or safety tour is to identify unsafe conditions and unsafe practices, and to recommend corrective action. Occupational health and safety legislation requires regular workplace inspections. More frequent inspections are needed for machinery and equipment likely to cause major accidents.

Inspection Team

Inspection teams may consist of a mix of personnel such as employees, supervisors and managers. OH&S legislation sets out procedures for designating person(s) to carry out workplace inspections.

When conducting an inspection, it is important that team members use required personal protection to set a good example while ensuring their own safety.

Roles and Responsibilities

Inspections are undertaken in accordance with a schedule agreed on by the Joint Health and Safety Committee (JHSC). The inspection teams generally use a checklist as a guide for conducting inspections.

Inspection Reports

Inspection reports are communicated to all levels of the organization. Posting inspection reports on the bulletin board, reviewing them at joint health and safety committee meetings, and sending a copy to management for review are all good communication practices.

Sample Inspection List

Date _____

Location/Department _____

Yes = Satisfactory **No = Unsatisfactory, needs attention**

Yes	No	Safe Work Practices
☐	☐	Use of machine guards
☐	☐	Proper manual lifting
☐	☐	Smoking: only in safe, designated areas
☐	☐	Proper use of air hoses
☐	☐	No horseplay
☐	☐	Other _____

		Use of Personal Protective Equipment
☐	☐	Eye/face protection
☐	☐	Footwear
☐	☐	Gloves
☐	☐	Protective clothing
☐	☐	Head protection
☐	☐	Aprons
☐	☐	Respirators
☐	☐	Other _____

		Housekeeping
☐	☐	Proper storage areas
☐	☐	Proper storage of flammable material (oily/greasy rags, etc.)
☐	☐	Proper Disposal of waste
☐	☐	Floors (clean, dry, uncluttered)
☐	☐	Maintenance of yards, parking lots
☐	☐	Other

		Electrical Safety
☐	☐	Machines grounding/GFI
☐	☐	Electrical cords
☐	☐	Electrical outlets
☐	☐	Other _____

Yes	No	Fire Protection
☐	☐	Fire extinguishers
☐	☐	Proper type/location
☐	☐	Fire equipment maintained
☐	☐	Emergency lighting

		Tools and Machinery
☐	☐	Chainsaws
☐	☐	Power Tools
☐	☐	Hand Tools
☐	☐	Snow Blowers
☐	☐	Operation guards
☐	☐	Belts, pulleys, gears, shafts
☐	☐	Oiling, cleaning, adjusting
☐	☐	Maintenance, oil leakage
☐	☐	Other _____

		First aid
☐	☐	First aid kits in rooms/ vehicles
☐	☐	Trained first aid providers
☐	☐	Emergency numbers posted
☐	☐	All injuries reported
☐	☐	Other _____

		Miscellaneous
☐	☐	MSDS/Labels
☐	☐	Dust/vapour/fume control
☐	☐	Safe use of ladders/scaffolds
☐	☐	New processes or procedures implemented
☐	☐	Other _____

Notes _____

Sample Inspection Report

Area Inspected _____ Inspector _____ Date _____

Priority Code (See below)	Location	Hazards	Recommended Corrective Action(s)/ Person(s) Responsible	Follow-Up Date	Date Completed
Analysis and Comments					

Priority Code: **A**–do immediately **B**–do within 3 days **C**–do within 2 weeks **D**–other

2. Accident Investigation and Reporting

Purpose

The purpose of accident investigation is to find the cause of the accident and NOT to blame people for the accident. Accidents as well as incidents (close calls) should be reported and investigated.

Inspection Team

The accident investigation team generally consists of the following:

- Manager/supervisor
- An expert (if appointed)
- Health and safety committee representative(s), certified member (if possible)
- Other persons as required

Roles and Responsiblities

You must report any occurrence of an accident or incident to your manager/supervisor immediately.

Your manager/supervisor is responsible for conducting the accident investigation and notifying the health and safety committee and other people as required by your company.

Report

The accident investigation report is generally submitted as a formal document which includes the following:

- Name and occupation of the employee
- Location and time of accident and injury (if any)
- Name(s) of witness(es)
- Description of the task including the equipment and working conditions
- Description of what happened to cause the accident

3. First Aid

First aid regulations require that employers must provide first aid facilities, equipment, and trained personnel in all workplaces. People who hold valid first aid certificates should make sure that the contents of first aid boxes are regularly checked and maintained.

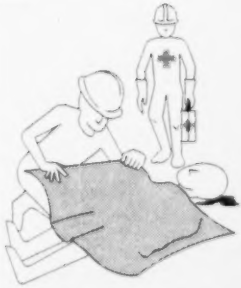
For information regarding first aid kits and first aid training, please contact the local branch of the St. John Ambulance Association or the Canadian Red Cross Society or any other approved organizations.

In case of injury:

1. Promptly obtain first aid.
2. Notify your supervisor/employer.
3. Ask your supervisor for a treatment memorandum to take to a doctor or hospital.
4. Complete and promptly return all forms required by the Workers' Compensation Board.
5. Your supervisor should decide on the need for an accident investigation.

Your employer should post the names and workplace telephone numbers of the people who have agreed to provide first aid at the workplace.

DO NOT MOVE an injured person.



WAIT for a qualified person to administer first aid.

Section III

Cold Weather Safety

1. Cold Weather Safety
2. How Cold Is It Out There?
3. Dress Warmly—Be Prepared
4. Maintenance of Cold Weather Clothing
5. Working Safely On Snow and Ice—Learn to Cope
6. Ice Safety on Frozen Bodies of Water
7. Vital Signs of Cold Injury—How Can You Help?
8. Injuries That Happen Over Time
9. Working in Remote Areas

1. Cold Weather Safety

Working in cold weather could be dangerous to the untrained, and to people without adequate winter clothing. For a well informed and prepared worker, winter work can be enjoyable and fulfilling. To cope with winter, stay active, dress warmly and follow safety rules.

Why Worry About Cold?

- A cold environment takes away body heat.
- Too much heat loss can cause lowering of the inner body temperature to dangerously low levels causing hypothermia.
- Exposed body parts may freeze in extreme cold, causing frostbite.
- Loss of body heat (hypothermia) and frostbite (freezing of body tissue) can present serious danger to health and can be life threatening.
- Cold air is dry air and can cause dry skin and loss of body fluid.
- If you have arthritis or rheumatism, cold weather can create more pain problems for you.
- Prolonged exposure to moderate cold and dampness can result in other types of injuries.
- Working in cold environments increases the risk of back injuries and other musculoskeletal injuries. Perform "warm up" stretching exercises before handling heavy equipment and material.

Why Worry About Working in Cold?

- You must wear winter clothing, head protection, gloves and boots while working in the the cold, all of which restrict movement.
- Cold affects dexterity, affecting skill and ease of using the hands.
- Extremely cold conditions adversely affect mental skills and coordination.

- The mobility of fingers slows down, which affects task performance;
- Cold affects grip force, and the skin's ability to sense temperature and pain.
- Cold exposure reduces muscle power and time to exhaustion. Don't overexert.
- Special care is needed while using ladders or working on elevated platforms in snow and icy conditions.
- Power tools and equipment need special care to be operational in a cold environment.
- Cold tool handles reduce grip force.
- Cold exposure aggravates vibration—induced white finger disease (Hand Arm Vibration Syndrome) making manual work painful.
- Blizzards can produce extremely cold conditions and endanger lives within minutes, seek shelter immediately.

2. How Cold Is It Out There?

Air temperature is not the only measure of cold. Wind makes it colder. Brisk winds and cold temperatures combine to make it dangerously cold.

Exposed human flesh freezes within one minute at -29°C (-20°F) when wind speed is 8 km/h (5 mph). When the wind speed increases to 32 km/h (20 mph) human flesh will freeze at -12°C (+10°F). *(See wind chill chart on following page).*

The danger warnings in the wind chill chart are applicable if your clothes and skin are dry. When you are wet, cold injury can result at much higher (less cold) temperatures.

Wind Chill Chart

		Ambient Temperature (°C)								
		4	-1	-7	-12	-18	-23	-29	-34	-40
Wind km/h	**Velocity mph**	**Equivalent Chill Temperature (°C)**								
Calm										
0	0	4	-1	-7	-12	-18	-23	-29	-34	-40
8	5	3	-3	-9	-14	-21	-26	-32	-38	-44
16	10	-2	-9	-16	-23	-30	-35	-43	-50	-57
24	15	-6	-13	-20	-28	-36	-43	-50	-58	-65
32	20	-8	-16	-23	-32	-39	-47	-55	-63	-71
40	25	-9	-18	-26	-34	-42	-51	-59	-67	-76
48	30	-16	-19	-22	-36	-44	-53	-62	-70	-78
56	35	-11	-20	-29	-37	-46	-55	-63	-72	-81
64	40	-12	-21	-29	-38	-47	-56	-65	-73	-82

Source: Threshold Limit Values (TLV™) and Biological Exposure Indices (BEI™) booklet, published by ACGIH, Cincinnati, Ohio

Little danger in less than one hour exposure of dry skin

DANGER—Exposed flesh freezes within one minute

GREAT ANGER Flesh may **freeze within 30 seconds**

Temperature Conversion Chart

(See Wind Chill Chart)

COLD

°C	5	4	3	2	1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
°F	41	39	37	36	34	32	30	28	27	25	23	21	19	18	16	14

VERY COLD

°C	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26
°F	12	10	9	7	5	3	1.4	0	-2	-4	-6	-8	-9	-11	-13	-15

DANGEROUSLY COLD

°C	-27	-28	-29	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39	-40
°F	-17	-18	-20	-22	-24	-26	-27	-29	-31	-33	-35	-36	-38	-40

High wind speed doesn't only occur when it's *windy*. Driving in an open vehicle will mechanically generate brisk air movement similar to high wind speeds.

The Saskatchewan Department of Labour has produced the following useful guide to help guess the wind speed.

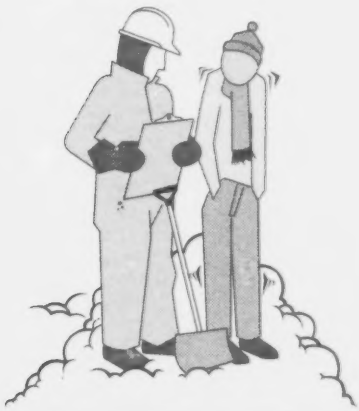
- 8 kilometres per hour (5 mph)—moves a light flag;
- 16 kph (10 mph)—fully extends a light flag;
- 24 kph (15 mph)—raises a newspaper sheet;
- 32 kph (20 mph)—blowing and drifting snow.

3. Dress Warmly—Be Prepared

☑ WEAR cotton or polypropylene long underwear for all-over warmth.

WEAR multiple layers of light, loose-fitting clothes. Air between the layers provides warmth. Outer wear should be waterproof.

WEAR cold weather clothing or arctic clothing that is appropriate for the outdoor temperature range and the type of activity.



WEAR mittens instead of gloves whenever possible, as mittens are warmer.

WEAR a warm hat with ear protection to prevent heat loss from the head. A wool knit cap provides the best protection. As much as 40% of body heat can be lost from an uncovered head.

USE an appropriate hard hat liner to reduce heat loss when wearing a hard hat.

WEAR woolen socks to protect your ankles and feet. Carry an extra pair where moisture or sweat is likely, and change when necessary.

WEAR slip-resistant, insulated safety footwear. For heavy work, a felt-lined rubber-bottomed, leather-topped boot with a removable felt insole is preferred.

KEEP an extra pair of safety shoes for inside work.

PROTECT your vision from UV rays by wearing appropriate sunglasses while working in snow and ice on a bright day.

KEEP snow and water out of your footwear.

USE suspenders instead of belts. Tight belts can constrict blood circulation.

WEAR a scarf or face mask while working in cold wind.

DO NOT WEAR dirty and oily clothing. Such clothing looses much of its insulation value.

DO NOT WEAR gloves, or scarves that can get caught in moving parts of the machinery.

4. Maintenance of Cold Weather Clothing

CARRY your cold weather protective clothing with you at all times.

FLUFF waterfowl down garments when removing them from the duffle bag.

KEEP garments dry; brush off snow and frost before entering warm buildings or vehicles.

FOLLOW manufacturers guidelines for cleaning clothing. Incorrect cleaning and washing methods may cause harm to insulation, fur and leather parts.

DO NOT KEEP cold weather clothing stored or compressed in a duffle bag for long periods of time.

DO NOT STORE damp clothing in a duffle bag. Hang it on a hanger for drying.

DO NOT LEAVE rips or tears unmended. Temporary repairs can be made with electrical or duct tape.

Avoid Sweating

Normally we dress to remain warm while inactive. When we start working, we start sweating. Sweat dampened clothes lose their insulation value. The following sequence is suggested when removing clothing to avoid sweating:

- Remove gloves/mittens, unless protection from snow and ice is needed.
- Remove headgear and neck wrapping.
- Open jackets at the waist and sleeves.
- Remove outer layers of clothing.

Replace clothing in the reverse sequence as soon as work is done. Do not wait until you start feeling cold. Rewarming will take time.

Examples of Cold Weather Clothing

Clothing	Type
Long underwear	Wool or polypropylene; cotton in dry conditions
Pants	Wool; cotton in dry conditions
Shirts, Sweaters, Turtlenecks	Wool, fleece or synthetic substitutes
Headgear	Woolen, polyester or polyvinyl caps, scarves, face masks
Gloves	Loose fitting with wool liners, gloves inside heavy mittens for extremely cold conditions
Socks	Two pairs—light or medium inner; and heavy wool outer socks
Parka	Loose fitting filled with down or insulating fiber-fill; attached hood; outer layer of waterproof material

5. Working Safely on Snow and Ice—Learn to Cope

Winter work involves a lot of shovelling, lifting, scraping, pushing and pulling. It pays to learn to do these jobs safely without hurting your back.

Slips and Falls

☑ TAKE small steps to improve traction.

WALK slowly on slippery, icy surfaces to prevent danger of slipping. Stop occasionally to break the momentum.

USE approved snow removal compounds.

AVOID sand around entrances where it can be tracked inside and require additional cleaning and possibly cause a slip or fall.

USE mats at entrances to prevent slippery conditions indoors caused by melting snow or ice.

USE correct ladder techniques while removing snow from roofs. Watch out for slippery rungs.

STAY out of the way where icicles may drop on you like spears.

PROTECT others from falling icicles by erecting a barrier or posting warning signs.

Safe Shovelling

Shovelling requires intense physical effort. You can burn up to 600 calories an hour shovelling snow. By shovelling the wrong way, you may end up with an aching back, or worse. Older and relatively inactive persons should be especially careful. The following precautions make snow shovelling easier and safer.

☑ DRESS warmly.

CLEAR snow as soon as possible. Fresh snow is lighter than wet or packed snow.

USE the right shovels for the job; pushers for pushing and throwers for throwing.

WATCH for small obstacles while shovelling.

KEEP ice chippers in good condition.

PUSH to the sides rather than lifting and throwing.

STEP forward when you load your shovel.*

BEND your knees and keep your back straight to prevent pressure on your lower back. *

TAKE a break when you feel tired.

USE ergonomically designed shovels.

☒ DO NOT OVERLOAD your shovel.

DO NOT OVEREXERT yourself. Shovelling can raise your heart rate and blood pressure to a dangerous point very quickly.

DO NOT SHOVEL without your doctors permission if you have a history of heart trouble.

DO NOT TWIST your spine when you toss the snow. Toss the snow directly in front of you.

* *See pages 54 and 55 on Shovelling and Digging*

Working With Large Equipment

☑ LEARN how to use snow removal equipment effectively and safely.

MAKE sure your equipment is in good running condition.

FOLLOW electrical safety rules for electrically powered snow removal equipment.

PERFORM a circle check before operating a vehicle.

PAY particular attention to windshield wipers and windshield cleaning fluid.

Snow Blowers

Snow blowers come in different sizes and models, for different types of work—power brooms for small jobs and riding types for bigger jobs.

☑ ALWAYS PUSH, never pull a snow blower, unless specifically designed to be pulled.

STOP THE ENGINE and DISCONNECT THE SPARK PLUG before clearing a clogged snow blower.

CARRY fuel in approved safety containers only.

CHECK and MAINTAIN built-in safety features of the snow blower frequently.

CARRY safety gear such as cones, flares, candles, etc, in case you break down.

DO NOT REFUEL while the engine is still running or hot from use.

DO NOT OVERLOAD a power broom.

DO NOT LEAVE a snow blower running while taking a rest break.

DO NOT SCRAPE snow right down to the ground. Adjust the height of the snow blower one inch above the surface to prevent picking up and shooting dangerous missiles.

Winter Driving Techniques

CHECK traction regularly. Slow down or stop driving if conditions deteriorate.

BE PREPARED TO STOP. Manoeuvering may be difficult.

KEEP a safe following distance to allow you to brake on icy and slushy roads.

KEEP your windshield windows and mirrors clear and clean. Glare from snow and ice can blind you.

WATCH for pedestrians. People "bundled up" in parkas tend to have very poor side vision. Use warning signals and signs.

PERFORM routine "circle checks" before operating any vehicle. (See page 56)

BE AWARE that ice forms quicker on bridges and over passes as well as shaded areas and traffic intersections. Slow down and be prepared for problems.

LEARN winter driving skills from experts. Ask your local automobile association for information.

Snow Mobiles

☑ TAKE a snowmobiling course if you are a beginner.

LEARN to recognize signs and symptoms of hypothermia.

KEEP your snowmobile in good working condition.

DRESS for cold weather conditions wearing warm layers of clothing.

WEAR a proper fitting CSA (or ANSI) approved helmet with a face shield to improve visibility and guard against frostbite.

TRAVEL with another person, either a passenger or a fellow snowmobiler.

USE a *buddy system* to watch each other.

AVOID obstacles such as low branches, snow banks, rocks, fallen trees, etc., to prevent collisions.

STAY OFF roads.

STOP, and WATCH for traffic before crossing a road.

AVOID unfamiliar territory, especially frozen lakes and rivers—drowning is a leading cause of snowmobile fatalities.

PLAN your trip. Let someone know where and when you are going and when you plan to return.

SEEK shelter if you start shivering or your hands and feet are cold.

SHUT OFF the engine before you clear snow from under the tracks.

6. Ice Safety on Frozen Bodies of Water

Ice Testing—Do Not Walk on Thin Ice

Ice thickness must be tested before any workers, or vehicles, are allowed on the surface.

☑ WEAR an approved life jacket or, preferably, an approved flotation suit when testing ice thickness.

STAY approximately 10 m (33 ft.) apart. The lead member must wear a safety harness attached to a 1 cm (3/8 in.) thick, and about 20 m (65 ft.) long polypropylene rescue rope held by trailing crew members.

TEST ice regularly for repeated work or travel over ice, to ensure continued safety.

Safe Ice Thickness

Clear blue ice is the strongest. White opaque ice is the least dense, weaker than clear blue ice. Grey ice indicates the presence of water from thawing and is unsafe as a load bearing surface.

Ice thickness is determined by the full thickness of clear blue ice, plus half the thickness of white continuously frozen ice.

Test holes should be cut according to procedures required by your employer. If the ice thickness is less than 15 cm (6 in.) test crew members should vacate the area immediately.

Load bearing capability of ice depends on its thickness. Charts are availabfe showing thickness cersus allowable load.

Safe Work Practices

☑ PREVENT hypothermia by ensuring there is a warm place such as a truck cab or hut available.

FOLLOW procedures and practices recommended by your employer.

USE personal protective equipment and rescue equipment as required by your employer.

EAT high energy food such as nuts and raisins.

AVOID alcohol, tobacco and cafeine based drinks.

7. Vital Signs of Cold Injury— How Can You Help?

Frostbite and hypothermia are the two major health hazards resulting from cold exposure.

Frostbite

Frostbite is the actual formation of ice crystals (freezing) in exposed body parts. Pain in the extremities may be the first sign of danger. Ice forms in the tissue and destroys it. Frostbite usually affects the nose, fingers, or toes. The affected part becomes pale and numb.

Frostbite occurs when:

- extremities such as hands, feet, ears, nose, etc., are exposed (either unprotected or with improper protection) to cold for an extended period of time;
- touching a very cold metal such as car door handles, metal fences, etc.;
- blood supply to extremities is obstructed by tight clothing or tightly laced boots;
- contact occurs with gasoline or cleaning fluids left outdoors. These liquids do not freeze even when the temperature falls far below the freezing point and can cause *instant* frostbite.

If you suspect frostbite do the following:

MOVE to a warm place. Apply warmth (not massage) to the affected parts.

BLOW on affected fingers. If your nose is frostbitten, apply your warm hands. If your hands are affected, put them in lukewarm (approx. 37°C) (not hot) water.

REMOVE tight clothes and jewelry. Use body warmth to warm the affected parts.

WRAP the frostbitten area in soft material and elevate the affected area. Frostbite is serious if the skin starts to harden and turn blotchy or blue.

OBTAIN medical help as soon as possible.

TAKE PRECAUTION against bacterial infection. Frostbitten skin is highly susceptible to bacterial infection. Loosely cover the affected area with sterile dressing.

DO NOT RUB the frostbitten area.

DO NOT PULL your hand away if you should accidentally become attached to cold metal. Pour warm water or any other fluid (even urine) to separate yourself.

DO NOT BREAK blisters that form as a result of frostbite.

DO NOT THAW frostbitten area unless you are sure it will not refreeze.

Hypothermia

Hypothermia is the over cooling of the body due to excessive loss of body heat which may lead to death.

Risk of hypothermia is high if a person is:

- ❄ cold
- ❄ wet
- ❄ tired
- ❄ hungry
- ❄ irritable
- ❄ uncomfortable

An early sign of hypothermia is excessive shivering, blue lips and finger tips, slurred speech, impaired judgement ability, and poor coordination. Shivering becomes more severe as body cooling continues and the inner body temperature falls below 35°C (normal body temperature is 37°C).

More profound hypothermia impairs mental functioning, resulting in confusion, disorientation, unconsciousness and poor decision-making. The desire or ability to seek protection from cold is lost, resulting in rapid loss of body heat which could be fatal.

Hypothermia slows down the heart rate. It may be difficult to feel the pulse rate of the victim.

In extreme cases, severe hypothermia can closely mimic death. Victims of such cases must be provided with medical care, as if they were known to be alive.

Hypothermia may occur at higher temperatures if a person is submerged in cold water well above the freezing point.

People with diabetes, injuries, kidney problems, epilepsy and arthritis are at a higher risk of hypothermia in comparison to healthy people.

Hypothermia can be fatal and needs immediate medical attention. Do the following as you wait for the first aid giver and medical help to arrive.

☑ GIVE dry clothes to a person removed from cold water. If no dry clothes are available, cover the person with material such as a plastic sheet or rain coat.

HELP or carry the co-worker to a warm shelter as soon as you notice signs of hypothermia. Such signs are excessive shivering, blue lips and finger tips, slurred speech and poor coordination.

USE a blanket and body-to-body heat to warm the person.

GIVE a conscious victim warm, non-alcoholic drinks in small quantities.

CONSULT a certified first aid person for the proper way to deal with hypothermia.

DO NOT USE alcohol as a warming agent. Alcohol may seem to provide warmth, but in reality it interferes with your ability to retain heat, resulting in a dangerous drop in body temperature.

DO NOT SUBMERSE a hypothermia victim in hot water or a hot shower as a means of rewarming. This may result in "rewarming shock" which could be fatal.

DO NOT ALLOW a hypothermia victim to exert himself/herself. Physical exertion such as walking, climbing, lifting, etc. may cause heart failure and death. A mild hypothermia victim will slowly rewarm and return to normal health.

Trench Foot (Immersion Foot)

Trench foot is injury of the feet resulting from continuously having wet feet in cold water at near freezing temperatures. The symptoms of various stages of trench foot are:

Minimal:	Reddening of the skin, slight numbness
Mild:	Swelling, numbness (reversible), pain
Moderate:	Swelling, redness, bleeding into the skin, nerve damage
Severe:	Swelling, bleeding into the skin, gangrene

Prevention

AVOID wet feet for prolonged periods.

KEEP a spare pair of dry socks available.

REMOVE boots and wet socks after work. Dry the feet and massage well to promote circulation.

SEEK medical attention as soon as possible.

8. Injuries That Happen Over Time

White Finger (Raynaud's phenomena, dead finger)

White finger is the blanching of the fingers, caused by use of hand-held vibrating tools. The early signs of disease are noticeable only when fingers are exposed to cold. The symptoms are tingling, numbness, and whitening of the fingers, and a reduced sense of heat, cold and pain.

Prevention

☑ KEEP hands warm and dry. Cold aggravates white finger disease.

ELIMINATE or reduce vibration exposure by using tools with anti-vibration devices.

MAINTAIN tools regularly. Tools in good operating condition vibrate less.

USE vibration absorbing gloves. Such gloves provide minimal protection from vibration but help to keep the hands warm.

USE vibration absorbing handles for equipment.

KEEP hands warm and dry. Cold aggravates white finger disease.

☒ DO NOT SMOKE. Smoking may increase the harmful effect of vibration.

Carpal Tunnel Syndrome and Tenosynovitis

Carpal Tunnel Syndrome results from damage to the nerve that runs through a channel (carpal tunnel) in the wrist. It is often found in people who do repetitive or stressful work with their hands, especially if they work with bent or twisting wrist, when using force. The symptoms are pain, burning, numbness, tingling and loss of strength. Often these conditions are strongest at night and on one side of the hand.

Tenosynovitis is inflammation of the tendons and tendon-muscle attachments. It is caused by overuse of the hand and arm muscles, especially during forceful repeated motions. Some areas of pain are: the base of the palm, the palm side of the fingers, the back of the wrist and the side of the wrist near the palm.

Prevention

☑ KEEP your hands warm.

BE AWARE of the positions and movements of your hands and wrists as you work. Try to alternate or change movements to relieve strain.

ROTATE jobs and change tasks.

PLAN your work and work station to suit yourself rather than the machine.

USE tools which are light, balanced and sized to suit you.

KEEP your wrist in a comfortable, natural position while operating tools.

KEEP the lower part of the arm close to the body and supported whenever possible; doctors may advise wrist supports to prevent the damage caused by twisting motions.

9. Working in Remote Areas

☑ DEVELOP a list of clothing to carry.

DEVELOP a cold weather kit which includes items for emergency vehicle survival.

HAVE plenty of juices, soft drinks, fruits, nuts, raisins and other food available.

OBTAIN training to orient yourself to cold weather operations and policies.

IDENTIFY a warm shelter nearby where you can go in case of frostbite or hypothermia.

DRINK enough fluids to replace fluid lost through breathing and perspiration. Dehydration increases the risk of hypothermia.

☒ DO NOT WORK alone. The *buddy system* enables you to observe each other for early sings of frostbite and hypothermia.

DO NOT CONSUME alcohol when exposed to cold. Alcohol produces a deceptive feeling of warmth. Under the influence of alcohol you may expose yourself to fatal cold conditions without being aware.

DO NOT RISK getting frostbite if you have previously suffered from frostbite. You might be extremely sensitive to cold.

Section IV

Safety Info for Outdoor Work

1. Basic Electrical Safety
2. Electrical Power Lines
3. Safe Use of Ladders
4. Safe Use of Chainsaws
5. Compact Loaders
6. Snow Throwers
7. Shovelling and Digging
8. Manual Material Handling
9. Truck Start-up—*The Circle Check*
10. Infectious Waste

1. Basic Electrical Safety

☑ INSPECT tools, power cords, and electrical fittings for damage prior to each use. Repair or replace damaged equipment.

☒ DO NOT WEAR loose gloves, loose clothing or jewelry while using rotating power tools.

Tools

☑ SWITCH tools OFF before connecting them to a power supply.

DISCONNECT power supply before making adjustments.

ENSURE tools are properly grounded or double-insulated. The grounded tool must have an approved 3-wire cord with a 3-prong plug. This plug should be plugged in a properly grounded 3-pole outlet.

TEST all tools for effective grounding with a continuity tester.

☒ DO NOT BYPASS the switch and operate the tools by connecting and disconnecting the power cord.

DO NOT USE electric tools in wet conditions or damp locations or outdoors unless tool is connected to a GFCI.

DO NOT CLEAN tools with flammable or toxic solvents.

DO NOT OPERATE tools in an area containing explosive vapours or gases.

Power Cords

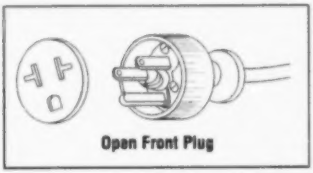
Power tools should have either a three-prong plug or double insulation. If you need an extension cord, use a proper, well maintained three-wire, grounded cord. Keep all tools and cords in good condition and never use power tools on wet grass or other wet surfaces. Make sure the extension cord is rated for the power requirement of the equipment.

☑ STORE power cords in a dry place.

KEEP power cords clear of tools during use.

SUSPEND power cords over aisles or work areas to eliminate stumbling or tripping hazards.

REPLACE open front plugs with dead front plugs. Dead front plugs are sealed and present less danger of shock or short circuit.



Open Front Plug

☒ DO NOT USE light duty power cords.

DO NOT CARRY electrical tools by the power cord.

DO NOT TIE power cords in knots. Knots can cause short circuits and shocks. Loop the cords or use a twist lock plug.

Check-list

Inspect Cords and Plugs

☑ CHECK power cords and plugs daily. Discard if worn or damaged. Have any cord that feels more than comfortably warm checked by an electrician.

Eliminate Octopus Connections

☑ PULL THE PLUG, NOT THE CORD.

☒ DO NOT PLUG several power cords into one outlet.

DO NOT DISCONNECT power supply by pulling or jerking cord from the outlet. Pulling the cord causes wear and may cause a shock.

Never Break Off the Third Prong on a Plug

☑ REPLACE broken 3-prong plugs and make sure the third prong is properly grounded.

Never Use Extension Cords as Permanent Wiring

☑ USE extension cords only to temporarily supply power to an area that does not have a power outlet.

KEEP power cords away from heat, water and oil. They can damage the insulation and cause a shock.

☒ DO NOT ALLOW vehicles to pass over unprotected power cords. Cords should be put in conduit or protected by placing planks alongside them.

DO NOT LEAVE power cords outdoors in the snow or rain.

2. Electric Power Lines

Three major sources of electrical injuries and fatalities are:

- contacting overhead uninsulated powerlines by ladders, scaffold parts, cranes and hoisting equipment;
- coming in contact with buried cables while trenching, backhoeing and digging fence post holes; and
- running into power poles and electrical equipment with machinery.

Don't Touch Power Lines

To touch or get close to a hydro wire with a ladder or antenna could cause serious injury or death.

Take Extra Care When Working Near Power Lines

You and/or your equipment should never come close to, or touch power lines. Anyone touching even just the equipment could be seriously injured. Safe limits of approach are tabulated on page 36. These limits of approach may vary from one jurisdiction to another. Ask your supervisor for limits that apply to your workplace. As well, limits of approach are greater for the public compared to those for electrical workers.

Before digging, call your local hydro company and other utilities to locate underground power, gas and telephone lines. To cut through one is dangerous and could black out an entire area.

Plant Trees Clear of Power Lines

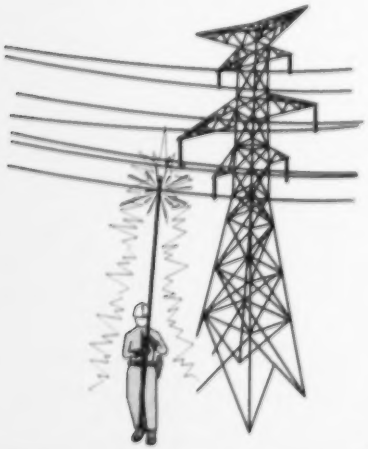
When planting trees, make sure that they won't grow up into power lines. If you do have a tree growing into lines, call your local hydro office. Don't attempt to prune or cut it down yourself. If it falls onto a line, it could be fatal.

Never Touch a Downed Wire

Even if the wire appears dead, touching it could be fatal.

Outdoor Electrical Outlets

By law, all outdoor electrical outlets should have *ground fault circuit interrupters (GFCIs)* for extra protection. This is especially important in damp locations where electrical shocks are usually more severe and a normal fuse or circuit breaker doesn't provide enough protection.



SAFE LIMITS OF APPROACH

(Measured in Metres (Feet) from the Point of Planned or Unplanned Movement)

Authorized Persons		Small Tools and Material	Shovels Cranes	Derricks Radial Booms
Voltage Range	OHSA* Regulation			
750–15,000 V	3 m (10 ft)	0.60 m (2 ft)	3 m (10 ft)	0.9 m (3 ft)
Up to 35,000 V	3 m (10 ft)	0.90 m (3 ft)	3 m (10 ft)	0.9 m (3 ft)
Up to 50,000 V	3 m (10 ft)	1.20 m (4 ft)	3 m (10 ft)	1.2 m (4 ft)
Up to 150,000 V	3 m (10 ft)	1.50 m (5 ft)	3 m (10 ft)	3 m (10 ft)
150,001–250,000 V	4.5 m (15 ft)	2.10 m (7 ft)	4.5 m (15 ft)	3 m (10 ft)
Over 250,000 V	6 m (20 ft)	3.6 m (12 ft)	6 m (20 ft)	6.1 m (20 ft)
Up to 550,000 V	N/A	3.6 m (12 ft)	6 m (20 ft)	6.1 m (20 ft)

Source: Electrical Utilities Safety Association of Ontario

*OHSA = Ontario Industrial Establishments Regulations (RR01990, Reg. 851)

N/A = Not Available

3. Safe Use of Ladders

Inspection of Ladders

☑ INSPECT ladders for:

- missing or loose steps or rungs (they are loose if they can be moved by hand)
- loose nails, screws, bolts or other metal parts
- cracked, split, worn or broken rails, braces, steps or rungs
- rough or splintered surfaces
- damaged or worn non-slip feet
- twisted or distorted rails
- missing identification label
- corrosion, rust, oxidization and excessive wear, especially on treads
- sharp edges on rails and rungs

Stepladders

☑ INSPECT ladders for:

- wobble/stability
- loose or bent hinge spreaders
- broken stop on hinge spreader
- loose hinges

Extension Ladders

☑ INSPECT ladders for:

- loose, broken or missing extension locks
- defective locks that do not seat properly when ladder is extended
- sufficient lubrication of working parts
- defective cords, chains and ropes
- missing or defective pads or sleeves

☑ INSPECT ladders before each use.

TAG defective ladders and take out of service.

CHECK fibreglass ladders regularly for cracks and exposed fibreglass.

FOLLOW manufacturer's maintenance guidelines for fibreglass ladders.

CHECK all nuts, bolts, spreaders and locks for tightness and good repair.

CHECK wooden ladders for rot, decay or warped rails.

PROTECT wooden ladders by following the manufacturer's guidelines.

CHECK all ladders for distortion by sighting along the rails. A ladder that is twisted or distorted is hazardous.

REPLACE worn or frayed ropes on extension ladders.

LUBRICATE pulleys on extension ladders regularly.

CHECK the condition of ladders that have been dropped or have fallen, before using them again.

☒ DO NOT MAKE temporary or makeshift repairs.

DO NOT TRY to straighten or attempt to use bent or bowed ladders.

Setting Up Portable Ladders

Falls from portable ladders are a major source of serious injury. Be aware of possible hazards and take proper precautions to prevent falling. Snow and ice make the ground slippery. Special precautions are needed when setting up ladders on snow or ice covered ground.

☑ USE a ladder designed for your task. Consider strength, type and CSA approval.

GET help when handling a heavy or long ladder.

KEEP ladder away from electrical wires.

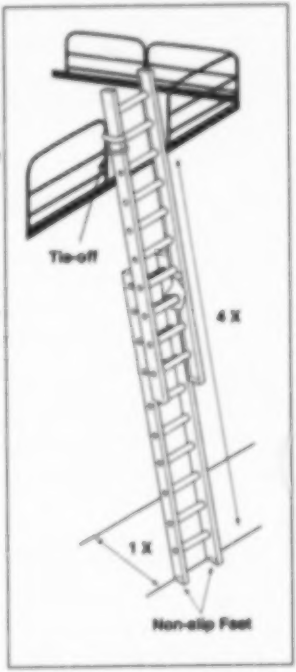
CLEAR area around base and top of ladder of snow, ice, debris, tools and other objects.

TIE OFF ladder at the top and secure bottom to prevent its slipping.

SET UP barricades and warning signs when using ladder in a doorway or passageway.

REFER to safety regulations for specific measurement requirements.

PLACE ladder feet 1/4 of ladder's working length away from the base of the structure.



EXTEND ladder at least 1m (3 ft) above the landing platform.

LOCATE ladder on a firm footing using slip-resistant feet or secure blocking, or have someone hold the ladder.

REST both side rails on top support, and secure ladder to prevent slipping.

DO NOT USE ladder in a horizontal position as a scaffold plank or runway.

DO NOT USE makeshift items such as a chair, barrel or box, as a substitute for a ladder.

DO NOT USE a portable ladder when other equipment is available. Replace ladder with a fixed stairway or scaffold.

DO NOT SPLICE together short ladders to make a longer ladder. Side rails are not strong enough to support the extra load.

DO NOT USE ladder in passageways, doorways, driveways or other locations where a person or vehicle can hit it. Erect suitable barricades or lock doors shut.

DO NOT PLACE ladder against flexible or moveable surfaces.

DO NOT PLACE ladder on slippery or icy ground.

DO NOT STRADDLE the space between ladder and another object.

Working on Portable Ladders

☑ CHECK for overhead electrical wires before setting up ladder.

TIE OFF yourself with a safety harness when working 3 m (10 ft) or more off the ground or when working with both hands.

CLEAN muddy or slippery boot soles before mounting ladder. Avoid climbing with wet soles. Ensure that footwear is in good condition.

FACE the ladder when going up or down and when working from it.

KEEP the centre of your body within the side rails.

ENSURE that only one person is on a single-width ladder. Only one person is allowed on each side of a double-width ladder.

GRASP rungs when climbing ladder, not side rails. If your foot slips on ladder, it is easier to hold onto rungs than to side rails.

WEAR protective footwear with slip-resistant soles and heels.

MAINTAIN three point contact by keeping two hands and one foot, or two feet and one hand on ladder at all times.

ENSURE that all electrical equipment used during ladder work is in good condition and properly grounded.

3-Point Contact

REST frequently to avoid arm fatigue and disorientation when the work performed demands reaching and looking up above your head.

DRAPE your arms over a rung and rest your head against another rung or side rail if you become dizzy or panicky. Climb down slowly.

DO NOT CARRY objects in your hands while on ladder. Hoist materials or attach tools to a belt.

DO NOT WORK from top three rungs. The higher a person goes on a ladder, the greater the possibility that the ladder will slip out at the base.

DO NOT OVERREACH from ladder; move as required.

DO NOT USE ladder near electrical wires.

4. Safe Use of Chain Saws

☑ READ your owner's manual.

WEAR personal protective equipment. (See page 46.)

OPERATE, adjust and maintain saws in accordance with CSA Standard Z62.1-M-77 "Chain Saws" and manufacturer's directions. In USA refer to standard ANSI B175.1.

REVIEW pertinent health and safety guidelines/national standards (eg. CSA/ANSI) before operating a chain saw. Operate the chain saw in well-ventilated areas only.

Fuelling

☑ FOLLOW manufacturer's directions for oil/gas mixture.

MIX fuel in a well-ventilated area. Keep a fire extinguisher nearby.

AVOID skin contact particularly in cold weather.

STORE fuel in an approved safety container. Use a funnel or spout for pouring. Wipe off any spills.

☒ DO NOT SMOKE or allow any ignition sources while refuelling.

DO NOT REFUEL a running or hot saw.

Starting the Saw

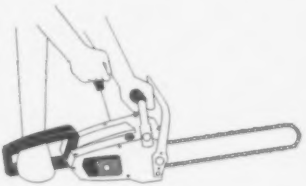
☑ INSPECT the saw before starting. Do not use a saw with damaged, loose or missing parts.

ENSURE that the guide bar is tight and chain fits snugly without binding.

KNOW how to use the control before starting a chain saw.

ENSURE that chain is clear of obstructions before starting.

HOLD the saw firmly on the ground. Point the chain away from your body and nearby obstructions. Use a quick, sharp motion on the starter cord.



WARM UP the saw prior to cutting. The saw should idle without the chain turning. If the chain continues to turn after the throttle switch is released, stop the saw. Then adjust the idle as shown in the owner's manual.

☒ DO NOT "DROP START" (starting saw in hands). This leaves only one hand to control a running saw and has resulted in injuries.

DO NOT START saw unless it is at least 3 m (10 ft) from approved fuel safety container.

DO NOT MAKE adjustments to chain or guide bar when motor is running.

Cutting

☑ PLAN each job before you start. Arrange to have help if you need it.

KNOW the location of the persons working with you at all times.

USE the correct saw. The weight, power, and bar length should all be suitable for the job.

OPERATE chain saw in a firm two-handed grip with fingers and thumb surrounding the handles. Keep both feet firmly positioned when operating a chain saw.

STAND on the uphill side of the log while cutting. The log may roll downhill.

MAINTAIN full power throughout each cut.

KEEP your saw clean—free of sawdust, dirt and oil.

AVOID fatigue. Fatigue can cause accidents. Rest before you feel tired.

DO NOT STAND directly behind saw.

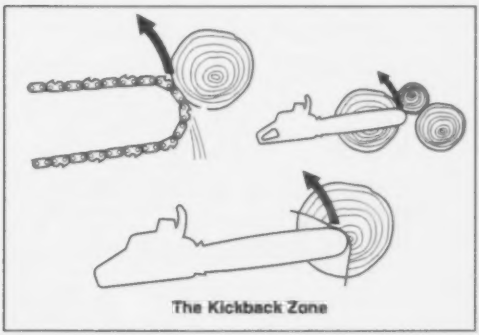
DO NOT LEAVE a saw running unattended.

DO NOT CARRY chain saw with saw running.

DO NOT CUT alone.

Kickback

Kickback is the term to describe *unexpected upward motion of the guide bar*. Kickback occurs when the end portion of the nose of the bar strikes an object and the chain momentarily snags.



The Kickback Zone

The most common and probably most violent kickback occurs when the chain and cutters guide bar make contact, either accidentally or intentionally, in the *kickback zone*.

How to Reduce the Risk of Kickback

☑ AVOID contact with the kickback zone. This prevents the chain from bunching up and climbing out of the track.

WATCH the guide bar nose. Do not let it touch logs, branches, or the ground when saw is running.

CUT only one piece at a time.

RUN the saw at full power when cutting.

KEEP the chain sharpened to specifications.

MATCH chain and bar for exact pitch and gauge.

SET depth gauges to manufacturer's settings.

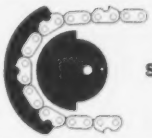
MAINTAIN correct chain tension.

HOLD the saw securely with both hands.

KNOW where the bar tip is at all times.

MAKE SURE the chain brake functions and adequately stops the chain. The stopping power of a chain brake can be greatly reduced by wear, or by oil, dirt or sawdust in the brake parts.

INSTALL a safety tip that covers the nose of the guide bar on the saw to prevent contact with the kickback zone. The tip must be removed for making bore cuts (pocket cuts) or for cutting wood thicker than the length of the guide bar.



USE a carrying case to prevent damage to the saw during transit and storage. The case also provides convenient storage for the owner's manual and tools.

SECURE saw and carrying case during transportation to prevent them from moving.

DRAIN all fuel into an approved safety container before storing saw for long periods. Then start motor to empty fuel from the carburetor.

STORE your saw in a cool, dry place.

DO NOT CUT in kickback zone.

DO NOT CUT close up to the saw. This exposes the guide and may result in contact.

DO NOT CARRY a saw on your shoulder unless the chain is properly guarded or removed.

DO NOT TRANSPORT a chain saw in the passenger compartment of a vehicle.

Personal Protective Equipment

Use proper safety clothing to reduce the risk of injury. The following personal protective equipment (PPE) is recommended when operating a chain saw.

Eye Protection

CSA-approved safety glasses and faceshield. A faceshield attached to the hard hat without safety glasses does not provide adequate eye protection.

In USA refer to standard ANSI Z87.1a "Eye and Face Protection".

Gloves and Mitts

Leather gloves with ballistic nylon reinforcement on the back. They offer a good grip on the saw, protect the hands and absorb some vibration.

Foot Protection

Heavy, well-fitted, CSA-approved safety work boots. Boots made of ballistic nylon offer the best cut protection.

Rubber soles for wet weather and snow, and hobnail boots, grip soles or cork soles for rough terrain.

Head Protection

CSA-approved hard hat, highly visible in colour.

In USA refer to standard ANSI Z89.1 "Industrial Workers Protective Headwear".

Hearing Protection

CSA-approved hearing protection. (Chain saws create high noise levels 95 to 115 dBA).

In USA refer to standard ANSI S12.6 "Method for the Measurement of Real-Ear Attenuation of Hearing Protectors".

Leg Protection

Trousers or chaps with sewn-in ballistic nylon pads.

Close-fitting clothing without cuffs, made of close-woven fabrics.

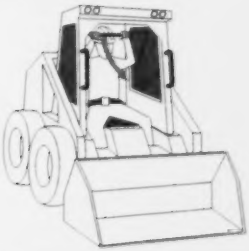
5. Compact Loaders

☑ READ and follow manufacturer's operating manual.

USE the safety treads and grab handles to get on and off the loader.

FOLLOW "Three Point Contact" rule. Either both hands and one foot or both feet and one hand should be in contact while getting off and on the loader.

USE seat bar and fasten seat belt.



KEEP feet on the pedals when operating loader.

USE only approved attachments and buckets.

KEEP other people away from work area.

CARRY bucket or attachments as low as possible.

LOAD, unload, and turn on level ground.

WEAR hearing and head protection.

CHECK the following before starting the engine:

- fuel and oil
- hydraulic fluid
- cooling system
- operator cab, seat belt and seat bar
- lift arm and cylinder pivot points
- tires

GO straight up and down slopes with the heavy end of the loader uphill.

DO NOT USE a loader without approved Roll-Over Protection (ROP) and Falling Object Protection (FOP) cab.

DO NOT EXCEED rated operating capacity.

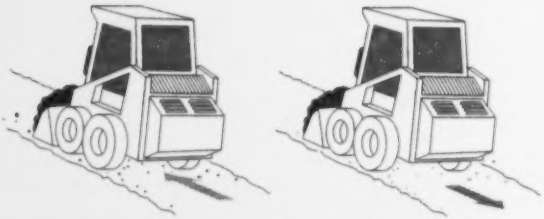
DO NOT CARRY passengers.

DO NOT TRAVEL or turn with lift arms up.

DO NOT LEAVE loader with engine running or with lift arms up.

DO NOT GO across a slope.

DO NOT APPROACH overhead wires.



Going UP and DOWN a Slope With Bucket FULL
KEEP HEAVY END UP

Going UP and DOWN a Slope With Bucket EMPTY
KEEP HEAVY END UP

6. Snow Throwers

☑ READ and follow manufacturer's operating manual.

USE only attachments and accessories approved by the manufacturer.

KEEP people away from starting and operating areas.

WEAR close-fitting clothing appropriate for cold weather exposure.

DISENGAGE all clutches and shift into neutral before starting motor.

CHECK shear bolts frequently for proper tightness.

ADJUST the collector housing to clear gravel or crushed rock surfaces.

WALK slowly, maintain good footing and keep a firm hold on the handles while operating.

CHANGE direction slowly on slopes.

KEEP clear of the discharge opening at all times.

STOP the motor after striking an object. Remove the wire from the spark plug and thoroughly inspect the snow thrower for any damage. Repair if necessary.

STOP the motor if the unit begins to vibrate abnormally. Check for cause of vibration.

ENSURE that the collector and all moving parts have stopped before cleaning, repairing or inspecting.

RUN the machine a few minutes after throwing snow to prevent freeze-up of the collector or impeller.

ALLOW the engine to cool before storing inside.

TAKE the following precautions when leaving the unit:

- disengage the power
- shift into neutral

- ❄ set the parking brake
- ❄ stop the motor
- ❄ remove the key

DO NOT MAKE adjustments with motor running.

DO NOT RUN the motor indoors, except when starting the motor and transporting the snow thrower in or out of the building.

DO NOT ATTEMPT to clear steep slopes.

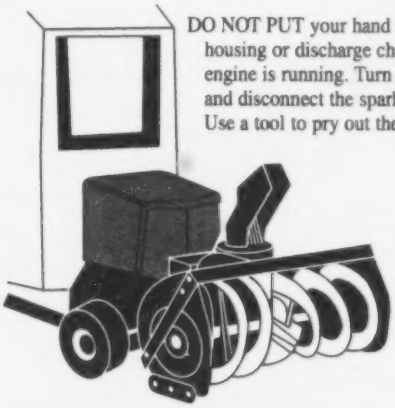
DO NOT OPERATE the snow thrower unless proper guards, plates or other safety protective devices are in place and working properly.

DO NOT OVERLOAD the machine by clearing snow too quickly.

DO NOT OPERATE the machine at high speeds on slippery surfaces.

DO NOT DIRECT snow at people.

DO NOT OPERATE the snow thrower without good visibility or light.



DO NOT PUT your hand into the auger housing or discharge chute while the engine is running. Turn off the engine and disconnect the spark plug wire. Use a tool to pry out the clog.

7. Shovelling and Digging

CONTACT utilities for location of cables and pipes prior to digging.

CHOOSE the proper tool for the task. A spade for digging and a shovel for shovelling.

ALLOW for safe distance between people.

Shovelling

CHOOSE shovel length depending on the task:

- garden shovel should be between elbow and chest height
- snow shovel handle should come up to chest height
- a light shovel (about 1.5 kg or 3 lbs) is suitable for shovelling snow
- a heavier shovel (about 3 kg or 6.5 lbs) is suitable for shovelling soil

Guidelines for Shovelling

3

Shift weight to rear foot.

Keep load close to body.

4

Turn your feet in direction of throw.

Guidelines for Digging

1

Push spade down using leg muscles.

2

Slide load close to body.

Ensure load is loose from ground before lifting.

Notes

Total weight (shovel and load should be 5–7 kg) (10–15 lbs).

Most efficient shovelling rate is 15–20 scoops per minute. This rate should not last longer than 15 minutes.

8. Manual Materials Handling

Guidelines for Lifting

To Lift from the Ground

1. Raise box upright.

2. Put one knee against box.

3. Pull box up the leg.

4. Rest box on edge of knee of the other leg.

5. Stand upright.

6. Carry the load with your back in upright position.

Guidelines for Transferring Weight

☑ REDUCE the load on your back by transferring weight. Shift body weight from one leg to the other. Avoid twisting your back. Momentum helps move the load.

USE the following sequence of motions for moving heavy or bulky materials:

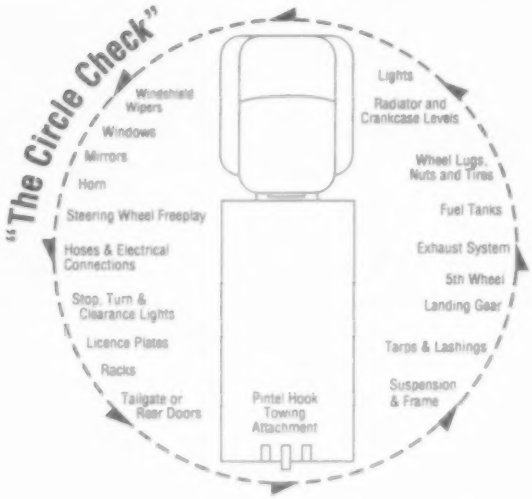
1 Pull material towards you.
2 Transfer your weight to the lift side.
3 Lift only to level required.
4 Shift weight to your other leg.
5 Push material into position.

9. Truck Start Up—*The Circle Check*

☑ READ and follow manufacturer's operating manual.

INSPECT your vehicle daily.

DEVELOP a routing method of inspecting the vehicle.



Before Operation

ADJUST seat and controls.

FASTEN seat belt if equipped with roll-over protection (ROP) structure.

CHECK for correct operation of the following:

Parking Brake—holds against slight acceleration

Foot Brake—holds, stops vehicle smoothly

Clutch and Gearshift—shifts smoothly without jumping or jerking

Steering—moves smoothly

Lights—headlights, warning lights, and turn signals operational

Dash Controls—all lights and gauges operational

All Moving Parts—no strange noises

Horn—operational

10. Infectious Waste

Infectious wastes include human waste, animal waste and objects and materials contaminated with blood and body fluids.

Occasionally, you may encounter discarded hypodermic needles, syringes, condoms, and other objects/materials contaminated with blood or body fluids. You must exercise special precaution in handling such materials/objects. Often these biological wastes are contaminated with germs which can make you ill. Major concerns are the spread of hepatitis B and AIDS.

☑ ASK your supervisor for training to be able to:

- handle and dispose of infectious waste safely
- understand potential hazards
- know your roles and responsibilities
- be familiar with regulations

CONSIDER all contaminated wastes as infectious.

TAKE extra precautions to avoid needlestick injuries.

HANDLE all contaminated wastes carefully to prevent body contact and accidental injury.

WEAR puncture-resistant gloves and safety boots.

DISPOSE of infectious waste in a puncture-resistant container such as a bucket or box with a secure lid and lined with leak-proof, puncture-resistant plastic.

POST a biological hazard symbol on the container.

CALL your local public health department or police for further assistance.

DO NOT LOAD the container beyond its capacity.

DO NOT COMPACT infectious waste. This process may disperse the contamination.

DO NOT MIX infectious waste with trash.

DO NOT REACH into any waste container or receptacle which may contain hazardous waste.

Section V

Safety Guidelines for the Work Environment

1. Chemical Safety
2. Noise
3. Fire Safety
4. Substances from Trees and Plants
5. Ultraviolet (UV) Radiation

1. Chemical Safety

The following are general guidelines for safe use of chemicals:

- all chemicals should be handled by trained employees only
- read the label for hazard information
- check MSDS (Material Safety Data Sheets) for information on toxicity, personal protective equipment and methods of safe use
- use required personal protective clothing and equipment
- do not smoke, eat or drink while using chemicals
- report all accidents and spills to your supervisor
- wash contaminated clothing separately from other laundry

2. Noise

People who operate noisy equipment such as chain saws, jackhammers, and earth moving machines, are likely to be exposed to harmful levels of noise.

Noise is too loud when:

- you have difficulty talking to someone
- you feel ringing sound in your ears after prolonged exposure
- your hearing is numbed at the end of the work shift and comes back the next morning

Noise exposure for several years can cause permanent hearing loss which cannot be cured by medical treatment. Everyone is not equally affected. However, as the level of noise and exposure time increases, more and more people are affected.

The loudness of noise is expressed in dB(A), A-weighted decibel units. The dB(A) levels of some common sounds are given below:

Wood chipper	100–110 dB(A)
Power mower, snowmobile	95–105
Chain saw	95–105
Sidewalk snow plow	90–100
Salt and sand truck	90–100
Exposure limits	**85–90**
Vacuum cleaner	80–85
Normal conversation	60–65
Whisper	30–40

Noise regulations set exposure limits at 85–90 dB(A) for an eight-hour exposure, five days a week. The purpose of these limits is to prevent or minimize chances of hearing loss.

The best method of protection against noise is to use quieter machines. As an interim measure, you should use hearing protection as required by your employer.

3. Fire Safety

Some common starters of fire are sparks, friction, open flames, smoking, and spilled fuels.

Small fires can be put out using portable fire extinguishers. You should be trained in order to be able to use a fire extinguisher. The type of extinguisher to be used depends on the type of fire.

Class of Fire	Type of Fire	Approved Fire Extinguisher
	Wood, paper, cloth	Type A; Type A-B
	Gasoline, paints, oils, grease	Type A-B; Type B-C; Type A-B-C
	Electrical wiring, fuse box	Type B-C; Type A-B-C

In case of fire, you must follow fire safety procedures established by your employer.

4. Substances from Trees and Plants

Skin contact with certain weeds and plants may cause irritation and dermatitis. Make sure you know what kind of plants you are working with and the plants to which you are allergic. For information contact the Canadian Poisonous Plant Information System available from:

Centre for Land and Biological Resource Research
Department of Agriculture & Agri-food
Room B147
K W Neatly Building
960 Carling Avenue
Ottawa, ON K1A 0C6 (613) 996-1665

5. Ultraviolet Radiation (UV)

UV exposure may cause damage to the skin and eyes. UV rays are an invisible part of sunlight. UV exposure is of concern mainly in summer months. In winter, harmful exposures may occur as a result of direct exposure to sunlight and reflections from snow, sand and concrete.

Effects on the skin

UV rays cause darkening of the skin, skin burns and erythema (reddening of the skin). Prolonged exposure increases the risk of skin cancer.

Certain substances increase the risk of damage due to UV rays. These are known as photosensitizing agents. Such agents include certain medications, tranquilizers, cosmetics, plants, weeds and coaltar creosote. If you are using medication, consult your doctor regarding possibility of photosensitizing action. In any case, take steps to decrease exposure to UV rays.

Effects on the eyes

The eyes are particularly sensitive to UV rays. A short exposure can result in painful, but temporary conditions such as watering, blurred vision and pain. The onset of these conditions may be noticed following a delay after exposure. Prolonged exposure increases the risk of cataracts.

UV Index

The Environment Canada weather forecast service rates the UV intensity as UV index on a scale of 0 to 10. The implications of the UV index are summarized in the table on the following page.

UV Index	Category	Time of Year over Southern Canada	Implications
9+	Extreme	May to mid August (rare in Canada)	Sunburns and skin damage can occur in less than 15 minutes. Minimize exposure. Take full precautions.
7 to 9	High	May to mid-August (mid day)	Sunburns and skin damage can occur quickly. Minimize sun exposure if possible. Take full precautions.
4 to 7	Moderate	Spring and early Fall	Take precautions to limit exposure to the sun. Moderate periods in the sun may still cause burning.
<4	Low	Fall and Winter	Minimal precautions necessary for normal activity. Long periods in the sun may still cause skin damage.

The following practices are recommended to minimize UV exposure when working outdoors:

- Avoid midday sun in summer months (11 am–4 pm).
- Wear clothing that is tightly woven to block sunlight.
- Wear a broad-brimmed hat that will shade your face, neck and ears.
- Apply on exposed skin waterproof sunscreen with an (SPF) sun protection factor of 15 or higher and which has both UVA and UBV protection.
- Wear UV filtering sunglasses. Plastic safety glasses and plastic sunglasses are good UV filters.
- Avoid unnecessary exposure. Seek shade when you don't have to be in the sun.

Sun Protection Factor (SPF)

The SPF measures the ability of sunscreen to protect the skin from UV rays in the sunlight. The larger the SPF number, the greater the protection that is provided i.e. SPF30 gives more protection than SPF15.

Section VI

Personal Protective Equipment

1. PPE Checklist
2. Safety Glasses
3. Safety Footwear
4. Hard Hats
5. Hearing Protection
6. Safety Gloves
7. Respirators

1. PPE Checklist

- ❑ Do you know what PPE is required by government regulations for the jobs you perform?
- ❑ Do you know your organization's written policy or practice governing the proper use of PPE?
- ❑ Do you know the written standards/rules governing the use of PPE for specific jobs?
- ❑ Do you or your health and safety committee or representatives review the PPE rules and procedures?
- ❑ Do you or your health and safety committee or representatives help identify the needs for PPE?
- ❑ Do you review MSDSs and labels when working with chemicals to find out what PPE is required?
- ❑ Is your PPE certified for its intended use by a standards authority (CSA, CGSB, NIOSH, ANSI)?
- ❑ Have you been involved in discussions about usage?
- ❑ Do you select the proper PPE from a number of choices?
- ❑ Is appropriate PPE made available to you?
- ❑ Are you using the PPE as prescribed?
- ❑ Does your PPE fit properly?
- ❑ Do you know how to test that PPE is being worn properly (for example, respirator fit testing)?
- ❑ Have you been instructed on how to properly care for and maintain your PPE?
- ❑ Do you have proper storage and cleaning facilities?
- ❑ Do you return used or damaged equipment in order to receive a reissue?.
- ❑ Do you clean and maintain PPE regularly?
- ❑ Does your supervisor check PPE to ensure that it is serviceable?
- ❑ Does your workplace annually review usage in order to reevaluate the need for the selection and use of PPE?

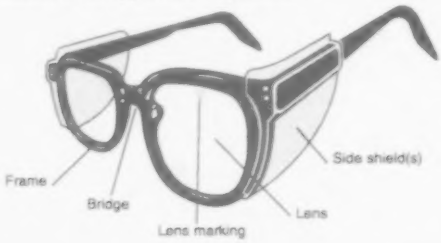
* In the US use personal protection approved by appropriate authority such as NIOSH, OSHA, ANSI. If in doubt, ask your nearest OSHA office.

2. Safety Glasses

How to Recognize Safety Glasses

Lenses: CSAcertified safety glasses have glass, plastic or polycarbonate lenses. They are stronger than regular lenses, are impact resistant, and come in prescription and non-prescription (plano) forms.

Lens Marking: The manufacturer's logo is marked (or etched) on all approved safety lenses.



Frames: Safety frames are stronger than streetwear frames and often heat resistant. They are designed to prevent lenses from being pushed into the eyes.

Frame Imprint: All CSAcertified safety frames have the imprint "Z943" stamped on them and may have CSA logo imprinted on the temple. In the USA refer to ANSI Z87.1 Standard for eye and face protection.

Correct Fit of Safety Glasses

☑ ENSURE your safety glasses fit properly. Eye size, bridge size and temple length all vary, so safety glasses need to be individually assigned and fitted.

WEAR safety glasses so that the temples fit comfortably over the ears. The frame should be as close to the face as possible and adequately supported by the bridge of the nose.

Proper Care of Safety Glasses

Safety glasses need maintenance.

☑ CLEAN your safety glasses daily. Follow the manufacturer's instructions. Avoid rough handling which can scratch lenses. Scratches impair vision and can weaken glass lenses.

STORE your safety glasses in a clean, dry place where they cannot fall or be stepped on. Keep them in a case when they are not being worn.

REPLACE scratched, pitted, broken, bent or illfitting glasses. Damaged glasses interfere with vision and do not provide adequate protection.

COMPARISON OF LENS MATERIALS

Material	Advantages	Disadvantages
Glass	• Scratch resistant • Superior visual transmission • Superior infrared/ ultraviolet filter • Greatest number of special-purpose lenses available	• General-grade impact resistance • Pits weaken impact resistance • Heavier than polycarbonate or plastic
Polycarbonate	• Strongest material for impact resistance • Lightweight–37% lighter than glass • More flexible than glass; lenses easier to change • High visual transmission (91%)	• Scratches more easily than glass • Limited choice in tints
Plastic	• Stronger than glass • More choice of tints than polycarbonate • Lightweight–40% lighter than glass • Sheds metal splash and spatter the best	• Scratches more easily than polycarbonate • Weaker on impact than polycarbonate

Note: Polycarbonate and plastic are the only two lenses which are CSA certified.

3. Safety Footwear

Safety footwear is designed to protect feet against a wide variety of injuries. Impact, compression and puncture are the most common types of foot injury.

☑ CHOOSE footwear according to the hazard. In Canada refer to CSA Standard Z195 "Protective Footwear". In the USA refer to ANSI Standard Z41-1991.

SELECT CSAcertified footwear. Ensure that it has the proper rating for the hazard and the proper sole for the working conditions.

WALK in new footwear to ensure it is comfortable.

LACE up boots fully. Highcut boots provide support against ankle injury.

USE a protective coating to make footwear waterresistant.

USE metatarsal protection (top of the foot between the toes and ankle) where there is a potential for injury.

INSPECT footwear regularly for damage.

REPAIR or replace worn or defective footwear.

Suggested Protective Footwear

Grade I will withstand 50 lb weight dropped from a height of 22 in.

Combined with:

for punctures,

for high voltage

This grade of boot is suitable for workers in the following fields:

- freight companies
- steel mills
- construction
- mining
- auto industries
- paper mills
- lumbering
- construction

Grade II will withstand a 50 lb weight dropped from a height of 16 in.

Combined with:

for punctures,

for high voltage

Yellow

This grade of boot is suitable for workers in the following fields:

- warehousing
- machine shops
- auto industries
- aircraft industries
- paint companies
- home appliances
- fire department

Grade III will withstand 50 lb weight dropped from a height of 10.5 in.

Combined with:

for punctures,

for high voltage

Red

This grade of boot is suitable for workers in the following fields:

- light manufacturing
- retail stores
- supervisors
- office staff
- hospitals
- service stations
- security
- ambulance staff

4. Hard Hats

Headwear consists of a shell and the suspension. These work together as a system and both need regular inspection and maintenance.

☑ CHOOSE the correct headwear for the job. In Canada refer to CSA Standard Z94.1, "Industrial Protective Headwear":

- Type I Hat (full brim)
- Type II Cap (with or without peak)
- Class A General Use, Limited Voltage Protection
- Class B High Voltage Protection
- Class C General Use, Metallic No Voltage Protection

In the US refer to ANSI Standard Z89.1 "Industrial Workers Protective Headwear".

DO NOT TRANSPORT headwear in rear windows of vehicles. In an accident situation it could cause serious injuries.

INSPECT headwear before each use.

Shell

The shell is rigid and light, and is shaped to deflect falling objects. Correct maintenance is important.

☑ INSPECT and replace a shell that shows signs of wear, scratches or gouges. Shell exposed to heat, sunlight and chemicals can become stiff or brittle. There can be a visible pattern of tiny cracks. Hats can be dull in colour or have a chalky appearance.

REPLACE headwear when hairline cracks start to appear. These cracks will spread and widen.

REPLACE headwear that has been struck, even if no damage is visible.

REMOVE and destroy any headwear if its protective abilities are questionable.

DO NOT DRILL holes, alter or modify the shell. Alterations may reduce the protection provided by the headwear.

DO NOT paint the plastic shell. Paint solvents can make plastic headwear brittle and more susceptible to cracks. Instead, use reflective marking tape to make numbers or symbols for identification purposes. Metal headwear may be painted.

DO NOT USE winter liners that contain metal or electrically conductive material.

DO NOT USE metal labels on Class B headwear.

DO NOT DRAW chin strap over brim or peak of Class B headwear.

Suspension

The suspension system is as important as the shell. It holds the shell away from the head and acts as a shock absorber. It also holds the shell in place on the head and allows air to flow freely.

ADJUST headband size so that headwear will stay on when wearer is bending over, but not so tight that it leaves a mark on the forehead.

ENSURE that the suspension is in good condition. The main purpose of the suspension is to absorb energy.

LOOK closely for cracked or torn adjustment slots, frayed material or other signs of wear.

CHECK suspension lugs carefully. Perspiration and hair oils can cause wear. Long periods of normal use can damage the suspension.

REPLACE suspension that has torn or broken treads.

DO NOT PUT anything inside headwear. There must be a clearance inside the headwear while it is being worn. In the event of a blow to the head, that space helps absorb the shock.

Maintenance and Inspection

The care and maintenance of headwear is needed if the headwear is to protect as designed. Its lifespan is affected by normal use and by heat, cold, chemicals and ultraviolet rays.

CLEAN the suspension and shell regularly.

USE a wet sponge or soft brush with mild dish detergent and thoroughly rinse with water to remove dirt and stains.

5. Hearing Protection

Hearing protectors reduce the amount of sound energy reaching the ears.

Improper fit and irregular use greatly reduce the effectiveness of hearing protection.

Select hearing protection that is:

* correct for the job. In Canada refer to CSA Standard Z94.2, "Hearing Protectors." In the USA refer to appropriate OSHA guidelines;
* capable of adequately reducing sound level. Check manufacturer's literature;
* Noise reducing capability of a hearing protector is given as NRR (Noise Reduction Rating). To determine the amount of noise reduction subtract 7 from the given NRR. (i.e. A hearing protector with a NRR of 20 will provide a maximum noise reduction of 13dB(A));
* comfortable enough to be accepted and worn during all exposures to noise.

Earplugs are inserted to block the ear canal. They may be premolded (preformed) or moldable (such as glass down, foam plastic, waxed cotton.)

Throw away single use ear plugs after use.

Canal caps are comprised of two earplugs held over the ends of the ear canal by a rigid headband.

Earmuffs are comprised of sound attenuating material and soft ear cushions which fit around the ear and hard outer cups. They are held together by a headband.

☒ DO NOT USE radio headsets as a substitute for hearing protection.

DO NOT MODIFY hearing protectors.

Proper Care of Hearing Protection

☑ REFER to manufacturer's instructions.

CHECK hearing protection regularly for wear and tear.

REPLACE ear cushions or plugs that are no longer pliable.

REPLACE unit when headbands are so stretched that they do not keep ear cushions snugly against the head.

DISASSEMBLE earmuffs to clean.

WASH hearing protectors with a mild liquid detergent in warm water, and then rinse in clear warm water.

ENSURE that sound attenuating material inside cushions does not get wet.

USE a soft brush to remove skin oil and dirt which can harden ear cushions.

SQUEEZE excess moisture from the plugs or cushions and then place on a clean surface to air dry.

Proper Fit of Hearing Protection

☑ FOLLOW manufacturer's instruction.

MAKE SURE your hands are clean before handling ear plugs.

ENSURE hearing protector tightly seals within the ear canal or against the side of the head.

COMPARISON OF HEARING PROTECTION

EARPLUGS	EARMUFFS
Advantages	***Advantages***
• Small and easily carried. • Convenient to use with other personal protective equipment (can be worn with earmuffs). • More comfortable in hot, humid work areas. • Convenient for use in confined work areas.	• Less attenuation variability among users. • Designed so that one size fits most head sizes. • Easily seen at a distance to assist in the monitoring of their use. • Not easily misplaced or lost. • May be worn with minor ear infections.
Disadvantages	***Disadvantages***
• Require more time to fit. • Difficult to insert and remove. • Require good hygiene practices.	• Less portable and heavier. • Inconvenient for use with other personal protective equipment. • Uncomfortable in hot, humid work areas. • Inconvenient for use in confined work areas.

6. Safety Gloves

Hand protection against a wide variety of hazards can be provided in a number of ways: barrier creams, finger guards, cots and thimbles, hand pads, mitts and gloves.

☑ CHOOSE hand protection that adequately protects from the hazard (see chart on following page).

FOLLOW manufacturer's instructions for care and maintenance of gloves.

ENSURE gloves fit properly.

ENSURE all exposed skin is covered by gloves. Gloves should be long enough so there is no gap between the glove and sleeve.

WASH OFF all chemical-protective gloves with water before removing them.

INSPECT and test gloves for defects before using.

Testing Glove for Leaks

TEST all rubber or synthetic gloves for leaks by inflating them.

☒ DO NOT WEAR gloves with metal parts near electrical equipment.

DO NOT USE worn or torn gloves.

DO NOT WEAR gloves while working on moving equipment; they can become caught.

GUIDE TO CHOOSING HAND PROTECTION

Hazard	Degree of Hazard	Protective Material
Abrasion	Severe	Reinforced heavy rubber, staple-reinforced heavy leather
	Less severe	Rubber, plastic, leather, polyester, nylon, cotton
Sharp edges	Severe	Metal, mesh, staple-reinforced heavy leather, Kevlar-steel mesh
	Less severe	Leather, terry cloth (Aramid fiber)
	Mild with delicate work	Lightweight leather, polyester, nylon, cotton
Chemicals and fluids	Refer to ACGIH Guideline for the Selection of Chemical Protective Clothing, the Manufacturer, product MSDS, or CCOHS	Dependant on chemical job-rated rubber or synthetic of the following material: natural rubber, neoprene, nitrite butyl rubber, Viton, polyvinyl chloride, polyvinyl alcohol and others
Cold		Leather, insulated plastic or rubber, wool, cotton
Electricity		Rubber-insulating gloves tested to appropriate voltage with leather outer glove
Heat	Medium high (up to 350°C)	Nomex, Kevlar, heat-resistant leather with linings
	Warm (up to 200°C)	Nomex, Kevlar, heat-resistant leather, terry cloth (Aramid fiber)
	Less warm	Chrome-tanned leather, terry cloth
General Duty		Cotton, barrier creams, terry cloth, leather
Product Contamination		Thin-film plastic, lightweight leather, cotton, polyester, nylon
Radiation		Lead-lined rubber, plastic or leather

7. Respirators

- ☑ ENSURE that the respirator is appropriate and fits properly.
- INSPECT before and after each use and during cleaning.
- INSPECT equipment designated for "emergency use" at least monthly in addition to after each use.
- REPLACE all parts that are cracked, torn, broken, missing or worn.
- FOLLOW manufacturer's instructions and CSA Standard Z94.4 or ANSI Standard Z88.2 for care and maintenance.

Facepiece

- ☑ ENSURE that there are no holes or tears.
- INSPECT for cracked, scratched or loose-fitting lenses. For full facepiece, check for missing mounting clips.
- ENSURE that metal nose clip forms easily over the bridge of the nose on disposable respirators.

Headstrap/Harness

- ☑ CHECK webbing for breaks.
- LOOK for deterioration of elastic.
- TEST excessively worn head harness.

Inhalation and Exhalation Valves

- ☑ ENSURE valve and valve seat are free of detergent residue, dust particles or dirt which may cause a poor seal or reduce efficiency.
- REPLACE missing or defective valve cover.

Filter Element

- [x] ENSURE that filter and mask are certified for use together.

CHECK filters to see that they are approved for the hazard.

INSPECT both filter threads and facepiece threads for wear.

CHECK filter housing for cracks or dents.

Air Supply System

- [x] INSPECT air-supply hose and end-fitting attachments for breaks, cracks or kinks.

TEST the tightness of connections.

ENSURE proper operation and condition of all regulators, valves or other airflow devices.

CHECK for proper settings of regulators and valves. Consult manufacturer's recommendations.

MONITOR operation of air-purifying elements and carbon monoxide or high-temperature alarms.

ENSURE that protective screens are intact and fit correctly over facepiece (abrasive blasting hoods and blouses).

Respiratory Battery Pack

- [x] FOLLOW manufacturer's instructions for charging/discharging.

FULLY discharge nicad batteries before charging.

ENSURE batteries are fully charged before using.

Repair, Cleaning and Storage

☑ FOLLOW manufacturer's instructions.

CLEAN and RINSE according to manufacturer's instructions.

DRY on a rack, clean surface or hang from a clothes line. Position the respirator so that the facepiece rubber will not "set" crookedly as it dries.

STORE respirator at the end of each shift to protect it from dust, sunlight, heat, extreme cold, excessive moisture, and chemicals.

CLEAN and disinfect shared respirators after each use.

PERMIT only trained and qualified personnel to repair respirators.

RECORD repairs and/or inspections.

REMOVE dirt.

CHECK for distortion caused by improper storage.

☒ DO NOT CLEAN with solvents.

DO NOT MIX parts from different manufacturers.

Section VII

Occupational Health and Safety Legislation

In Canada

1. **Canadian Occupational Health and Safety Legislation**
   - Government's Responsibilities
   - Worker's Rights and Responsibilities
   - Supervisor's Responsibilities
   - Employer's Responsibilities
   - Formation of Joint Health and Safety Committee
   - Role of Joint Health and Safety Committee
   - Work Refusals
   - Work Stoppage

2. **Workplace Hazardous Material Information System (WHMIS)**
   - Hazard Symbols and Classes

In the United States

3. **US Occupational Safety and Health Legislation**
   - General Outline
   - Duties of Employers
   - Duties of Employees
   - Key Provisions
   - Hazard Communication
   - Hazard Warning and Symbols

The purpose of Occupational Health and Safety (OH&S) legislation is to protect employees against hazards on the job. It outlines the general rights and responsibilities of the employer, the supervisor and the worker.

The law makes employers and employees jointly responsible for workplace health and safety.

Employers are responsible for providing a healthy and safe workplace. Employees are responsible for working in a safe manner as required by the employer.

In Canada

1. What Does Occupational Health and Safety Legislation Say?

Each of the provinces and the federal government have their own OH&S legislation. The details of the OH&S legislation vary slightly from one jurisdiction to another but the basic elements are the same. These basic elements include the following:

Government's Responsibilities

i) to establish and enforce occupational health and safety legislation
ii) to conduct workplace inspections
iii) to disseminate information
iv) to promote training, education and research

Worker's Rights

i) to refuse unsafe work
ii) to participate in the workplace health and safety activities through Joint Health and Safety Committee (JHSC) or worker health and safety representative
iii) to know actual and potential dangers in the workplace

Worker's Responsibilities

i) to work in compliance with OH&S act and regulations
ii) to use personal protective equipment and clothing as directed by the employer
iii) to report workplace hazards and dangers
iv) to work safely

Employer's Responsibilities

i) to establish and maintain a joint health and safety committee, or cause workers to select at least one health and safety representative
ii) to take every reasonable precaution to ensure workplace is safe
iii) to inform and train employees about any potential hazards
iv) to inform and supply personal protective equipment and ensure workers know how to use the equipment safely and properly
v) to immediately report all critical injuries to the government department responsible for OH&S
vi) to train all employees on how to safely use, handle, store and dispose of hazardous substances and handle emergencies

Joint Health and Safety Committee

i) must be comprised of one half management and at least one half labour representatives
ii) must meet regularly as required by the OH&S legislation
iii) must be co-chaired by one management chairperson and one worker chairperson
iv) employee representatives are elected or selected by the workers or their union

Role of Joint Health and Safety Committee

i) to act as an advisory body
ii) to identify hazards and obtain information
iii) to recommend corrective actions
iv) to assist in resolving work refusal cases
v) to participate in accident investigations and workplace inspections

Work Refusals

You can refuse work if you have reason to believe that the situation is unsafe to either yourself or your co-workers.

i) You must report to your supervisor that you are refusing to work and state why you believe the situation is unsafe.
ii) You, your supervisor, and a JHSC member or worker representative will investigate.
iii) You return to work if the problem is resolved.
iv) If the problem is not resolved, a government health and safety inspector is called.
v) Your supervisor may assign reasonable alternative work.
vi) Inspector investigates and gives decision.

2. Workplace Hazardous Materials Information System

WHMIS (Pronounced whimiss)

WHMIS applies to all Canadian workplaces. It requires that all workers who work with or near a hazardous substance (controlled product) be informed about its potential hazards and recommended safe work practices.

WHMIS requires that information be provided in three ways:

1. All controlled products used in the workplace must have a WHMIS label on the container.
2. Material Safety Data Sheets (MSDS) and hazard information must be readily available in the workplace. A MSDS summarizes the health and safety information about the product.
3. Workers must receive training to be able to recognize and work safely with chemicals.

The **HAZARD SYMBOL** is an important part of the WHMIS label. It warns the user that a particular hazard exists.

Actual hazards from toxic substances depend on the amount (level and duration) of exposure. A brief exposure at high levels may result in chemical poisoning within hours. Prolonged exposure at low levels may cause illness after several years.

Hazard Symbols and Classes

Class A Compressed Gas	Contents under high pressure. Cylinder may explode or burst when heated, dropped or damaged.
Class B Combustible and Flammable Material	May catch on fire when exposed to heat, spark or flame. May burst into flames.
Class C Oxidizing Material	May cause fire or explosion when in contact with wood, fuels and other combustible material.
Class D, Division 1 Poisonous and Infectious Material: immediate and serious toxic effects	Poisonous substance. A single exposure may be fatal or cause serious or permanent damage to health.
Class D, Division 2 Poisonous and Infectious Material: other toxic effects	Poisonous substance. May cause irritation. Repeated exposure may cause cancer, birth defects, or other permanent damage.
Class D, Division 3 Poisonous and Infectious Material: biohazardous infectious material	May cause disease or serious illness. Drastic exposures may result in death.
Class E Corrosive Material	Can cause burns to eyes, skin or respiratory system.
Class F Dangerously Reactive Material	May react violently causing explosion, fire or release of toxic gases, when exposed to light, heat, vibration or extreme temperatures.

3. US Occupational Safety and Health Legislation

General Outline

In the United States of America (US) the Occupational Safety and Health Act is popularly known as OSHAct. The Occupational Safety and Health Administration (OSHA) is responsible for administering the OSHAct.

The OSHAct does not cover the following four categories of people:

- Self-employed persons
- Farms which employ only immediate family members of the farm employer
- Workers covered by other legislation
- State and local government employees

Regulations dealing with OSHA are published in Title 29 of the Code of Federal Regulations as:

- 29 CFR Part 1910—Occupational Safety and Health Standards
- 29 CFR Part 1926—Construction Standards

These standards define exposure limits, exposure monitoring methods, medical surveillance and protective measures.

Duties of Employers

The OSHAct sets out two main duties for employers:

- Employers must provide a workplace which is free from hazards that are known to cause or likely to cause death or serious physical harm to employees.
- Employers must comply with occupational safety and health standards under the Act.

Duties of Employees

Employees must comply with occupational safety and health standards, rules, regulations and orders which are applicable to their own conduct and actions.

Key Provisions

Some of the key provisions of the OSHAct are to:

- assure, insofar as possible, that every employee has safe and healthy working conditions.
- require employers to maintain accurate records of exposures to potentially toxic materials or harmful physical agents and inform employees of the monitoring results.
- provide for employee walk-around or interview of employees during the inspection process.
- provide procedures for investigating alleged violations, at the request of any employee or employee representatives, issuing citations and assessing monetary penalties against employers.

Hazard Communication

The intent of the OSHA Hazard Communication Standard is to provide employees with information and training about the potential health hazards from exposure to workplace chemicals. The Standard requires that employee training include:

- explanations of the requirements of the standard;
- identification of workplace operations where hazardous chemicals are present;
- knowledge of the methods and observations used to detect the presence of hazardous workplace chemicals;
- assessment of the physical and health hazards of those chemicals
- warnings about hazards associated with chemicals in unlabelled pipes;

- descriptions of hazards associated with non-routine tasks;
- details about the measures employees can take to protect themselves against these hazards, including specific procedures;
- explanation of the labelling system;
- instructions on location and use of material safety data sheets (MSDSs);
- details on the availability and location of the hazardous materials inventory, MSDSs, and other written hazard communication material.

Hazard Warning and Symbols

Chemicals produced in the US come under OSHA Hazard Communication Standard. The label on the container must warn about potential hazards of the product. OSHA does not require hazard symbols on the label, however, the skull and crossbones symbol is acceptable on containers of highly toxic substances and the flame symbol is acceptable on containers of flammable substances.

Section VIII

Where to Go for More Information

In Canada

1. **Canadian Centre for Occupational Health and Safety (CCOHS)**
2. **Responsibility for Occupational Health and Safety**

In the USA

3. **US Federal Safety and Health Agencies**

   EPA

   NIOSH

   OSHA

   OSHA Regional Offices

In Canada

1. Canadian Centre for Occupational Health and Safety (CCOHS)

Customer Service
Phone (905) 570-8094
Toll-free 1-800-668-4284 (Canada and US only)
Fax (905) 572-2206
E-mail custserv@ccohs.ca

Inquiries
Phone (905) 572-4400
Toll-free 1-800-263-8466
Fax (905) 572-4500
E-mail inquiries@ccohs.ca

2. Canadian Governmental Departments with Chief Responsibility for Occupational Health and Safety

Federal Jurisdiction

Human Resources Development Canada
Labour Branch (819) 953-0155
Workplace Information Directorate
1-800-567-6866
Labour-Management Partnerships Program
1-800-563-5677
Internet http://labour-travail.hrdc-drhc.gc.ca/eng/about.html

Alberta

Alberta Labour Workplace Health and Safety
General Inquiries (403) 427-8842
Fax (403) 427-5698
Internet http:/www.gov.ab.ca/~lab

British Columbia

Workers' Compensation Board of British Columbia
General Inquiries (604) 273-2266
Toll free in B.C. 1-800-661-2112
Fax (604) 279-3151
Internet http://www.web.bc.ca

Manitoba

Department of Labour Workplace Safety and Health Division
General Inquiries (204) 945-3602
Toll free in Manitoba 1-800-282-8069
Fax (204) 945-4556
WHMIS (204) 945-3603
Internet http://www.gov.mb.ca/labour/safety/work1.html

New Brunswick

Workplace Health, Safety and Compensation Commission of New Brunswick
General Inquiries (506) 632-2200
Toll free in N.B. 1-800-442-9776
Fax (506) 738-4227
Internet http://www.gov.nb.ca/whscc/index.htm

Newfoundland

Department of Environment and Labour
Occupational Health and Safety Division
General Inquiries (709) 729-5548
Toll-free in Newfoundland 1-800-563-5471
Internet http://www.gov.nf.ca/envlab.htm

Northwest Territories

Department of Public Works and Services
General Inquiries (403) 873-7468
Fax (403) 873-0117
Internet www.gov.nt.ca

In Canada

1. Canadian Centre for Occupational Health and Safety (CCOHS)

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WHMIS (204) 945-3603
Internet http://www.gov.mb.ca/labour/safety/work1.html

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Internet http://www.gov.nb.ca/whscc/index.htm

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Occupational Health and Safety Division
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Toll-free in Newfoundland 1-800-563-5471
Internet http://www.gov.nf.ca/envlab.htm

Northwest Territories

Department of Public Works and Services
General Inquiries (403) 873-7468
Fax (403) 873-0117
Internet www.gov.nt.ca

Nova Scotia

Department of Labour Occupational Health and Safety Division
General Inquiries (902) 424-5400
Fax (902) 424-3239
Toll free in Nova Scotia 1-800-952-2687
Internet http://www.gov.ns.ca/labr/ohs.htm
E-mail labrohs@gov.ns.ca

Ontario

Ministry of Labour Occupational Health and Safety Branch
General Inquiries (416) 326-7770
Toll free in Ontario 1-800-268-8013
Fax (416) 326-7761
Internet http://www.gov.on.ca

Prince Edward Island

Workers' Compensation Board
14 Wexmouth Street
P.O. Box 757
Charlottetown C1A 7L7
General Inquiries (902) 368-5680
Fax (902) 368-5705

Québec

CSST (Commission de la santé et de la sécurité du travail du Québec)
General Inquiries (514) 873-7183
Fax (514) 873-7007
Service répertoire toxicologique
Phone (514) 873-6374
Internet http://www.csst.qc.ca

Saskatchewan

Department of Labour Occupational Health and Safety Branch
General Inquiries (306) 787-4496
Toll free in Saskatchewan 1-800-567-7233
Internet http://www.gov.sk.ca/govt/labour

Yukon

Workers' Compensation, Health and Safety Board
General Inquiries (403) 667-5645
Fax (403) 393-6279
Toll free in the Yukon 1-800-661-0443
Internet http://www.gov.yk.ca/

In the USA

3. US Federal Safety and Health Agencies

EPA

401 M ST., SW
Washington, DC 20460
Phone (202) 382-2080

NIOSH

National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

Publications Dissemination
General Inquiries (513) 533-8328
Fax (573) 533-8573
Hazards Evaluations and Technical
Assistance Branch (513) 841-4382
Toll-free in the US 1-800-356-4674

OSHA

Occupational Safety & Health Administration
200 Constitution Ave., NW
Washington, DC 20210
Phone (202) 219-8148

OSHA Training Institute
1555 Time Dr.
Des Plaines, IL 60018
Phone (708) 297-4810

OSHA Regional Offices

Region I: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont US Dept. of Labor—OSHA
JFK Federal Building, Room E340
Boston, MA 02203 (617) 565-9860
Fax (617) 565-9827

Region II: New Jersey, New York, and Puerto Rico USA Dept. of Labor—OSHA
201 Varick St., Rm. 670
New York, NY 10014
Phone (212) 337-2378
Fax (212) 337-2371

Region III: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia and West Virginia USA Dept. of Labor—OSHA
Gateway Bldg.
3535 Market St. Suite 2100
Philadelphia, PA 19104
Phone (215) 596-1201
Fax (215) 596-4872

Region IV: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
USA Dept. of Labor—OSHA
1375 Peachtree St., NE Suite 587
Atlanta, GA, 30367
Phone (404) 347-3573
Fax (404) 357-0181

Region V: Indiana, Illinois, Michigan, Minnesota, Ohio, and Wisconsin USA Dept. of Labor—OSHA
230 S. Dearborn St., Rm. 3244
Chicago, IL 60604
Phone (312) 353-2220
Fax (312) 353-7774

Region VI: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas USA Dept. of Labor—OSHA
525 Griffin St., Rm. 602
Dallas, TX 75202
Phone (214) 767-4731
Fax (214) 767-4137

Region VII: Iowa, Kansas, Missouri, and Nebraska USA Dept. of Labor—OSHA
City Center Square
1100 Main St., Suite 800
Kansas City, MO 64105
Phone (816) 426-5861
Fax (816) 426-2750

Region VIII: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming USA Dept. of Labor—OSHA
1999 Broadway, Suite 1690
Denver, CO 80202-5716
General Inquiries
Phone (303) 844-1600
Fax (303) 844-1616

Region IX: American Samoa, Arizona, California, Guam, Hawaii, Nevada, and Trust Territory of the Pacific Islands
USA Dept. of Labor—OSHA
71 Stevenson St., 4th Floor
Suite 420
San Francisco, CA 94105
Phone (415) 744-6670
Fax (415) 744-9990

Region X: Alaska, Idaho, Oregon, and Washington USA Dept. of Labor—OSHA
1111 Third Ave.
Suite 715
Seattle, WA 98101-3212
Phone (206) 553-5930
Fax (360) 553-6499

Notes

Notes

Other Products on CD-ROM by CCOHS

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A collection of chemical information including:

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References to oh&s books, journals, articles and reports

NIOSHTIC®*
HSELINE* on CCINFOdisc
TOXLINE® on CCINFOdisc
OSH CanData
OSH Interdata

Regulatory Information

Canadian *enviro*OSH Legislation* Complete text, including graphics, of health, safety and environmental acts and regulations from all jurisdictions. Available as a national or regional collection including–National, Ontario, Eastern Canada, or Western Canada.

Canadian *enviro*OSH Legislation PLUS Standards
National collection of Canadian H&S Legislation PLUS the complete text of standards referenced in the legislation.

The Chemical Advisor® Fully compiled regulatory and advisory data on over 25,000 chemicals.

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Publications in this series

Groundskeepers Safety Guide for groundskeepers, landscape contractors and nursery workers

Cold Weather Workers Safety Guide addresses the h&s information needs of the outdoor worker

School Workers Health and Safety Guide for teachers, custodians, school administrators and school board officials

Office Ergonomics Safety Guide helps office workers to recognize ergonomic hazards and take remedial action

Food Service Workers Safety Guide covering all safety aspects of the food preparation and service industries

Warehouse Workers Safety Guide for workers in warehouses, storage facilities, bulk stores and the transport industry

Indoor Air Quality Health and Safety Guide addresses concerns about indoor air quality, and explains everything building occupants need to know about ensuring their health and comfort

Violence in the Workplace Prevention Guide an essential resource for anyone who wants to learn about workplace violence and its prevention

Welders Health and Safety Guide helps workers recognize hazards associated with welding work and prevent injury and illness

For more information about these titles

(905) 570-8094 or **1-800-668-4284**

Fax: (905) 572-2206 E-Mail: custserv@ccohs.ca

Web Site: http://www.ccohs.ca

Canada's national centre for occupational health and safety. We provide unbiased information, advice and training on how to prevent illness and injury in the workplace.

When you have a question about health or safety, remember to use these FREE services

1-800-263-8466
inquiries@ccohs.ca

www.ccohs.ca/oshanswers

For more information about CCOHS products and services:

(905) 570-8094 or **1-800-668-4284**
Fax: (905) 572-2206 E-Mail: custserv@ccohs.ca
Web Site: http://www.ccohs.ca

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135 Hunter Street East, Hamilton Ontario Canada L8N 1M5